tracted less attention since Angot in 1887, and also Hann, showed conclusively its dependence on secondary local conditions. Three Japanese investigators from the Geophysical Seminary of the Physical Institute, Tokyo, contribute an account [1] of a preliminary attempt to trace more definitely the mechanism of these local influences, one of the most obvious of which, under the name of "continentality," has recently been attracting the attention of Mr. C. E. P. Brooks in this country in connection with climate, and with a purely geographical theory of the ice age.

The elementary definition of continentality as the percentage of land in a circle of definite size (say 10° radius) surrounding the station is clearly insufficient, so much depending upon the orientation and shape of the coast line or lines that the form of the function is bound to be complicated. The Japanese authors soon come to the conclusion that it is not linear, and are constrained to make a series of simplifying assumptions in order to reach a workable hypothesis. The assumptions are no more probable than those of the early days of the theory of tides, with which the present problem has obvious analogies.

With these limitations the authors appear to account for such features as the variation with longitude, the inversion of phase near the poles, and the minimum amplitude near the coast, but a general solution of the problem has evidently not yet been reached. They indicate the lines on which they propose to continue the investigation, and conclude with a representative set of daily variation curves for 10 British observatories, showing considerable dissimilarity, those of Oxford and Aberdeen, for instance, being almost the converse of each other. A systematic series of stations within the Empire, chosen with special reference to the elucidation of this problem, may well form part of the program of coordinated British Empire meteorology so strongly advocated by Maj. Lyons in his presidential address to the Royal Meteorological Society.

The barometric variations dealt with in the above paper, as generally studied, are naturally to be regarded as vertical oscillations of the free atmosphere, though there is a possible difficulty in the differentiation between statical and dynamical pressure, when an ascending or descending current is in question. But there is also a very decided horizontal oscillation or motion of the free atmosphere, and this has begun to attract attention since the use of pilot balloons has provided more information about the direction of the wind at different heights than can be inferred from the motion of clouds. A paper from Batavia [2] has appeared in the Proceedings of the Royal Academy of Amsterdam dealing with the semidiurnal variation of this motion.

There is a good deal of uncertainty about the investigation, even in a favorable place like Batavia, where atmospheric conditions are as a rule very quiet and steady. Observations were made not only at Batavia, but also at a neighboring mountain station of 3,000 meters elevation, as well as from a small coral island, to eliminate the land effect. Single observations are included, specially at times of the day when convection currents are not in evidence in the lower atmosphere; otherwise double observations by day and by night were obtained with different base lines of approximately one-half mile, 1 mile, and 1½ miles in length. Some hundred of ascents were observed, of which a fair proportion reached a height between 9 and 11 kilometers, only 30 per cent failing to reach the 4-kilometer level.

The data are admittedly insufficient to determine a diurnal oscillation, but Dr. van Bemmelen is fairly satisfied with the result for the semidiurnal one. The east and north components are treated separately, and it is found that the former has a greater amplitude than the latter and also a better determined phase. Gold's theoretical results for the lower layers are confirmed (Phil. Mag. vol. 19). The phase of the east component diminishes up to 4 kilometers, and probably increases above that height, showing a fairly close analogy with the vertical oscillations.—*W. W. B.*

[1] *Terada, T., Kiuti, M., & Tukamoto, J.* On diurnal variation of barometric pressure. Jour., Coll. sci., Imp. univ. Tokyo, November 20, 1917, 41, art. 1.

[2] *Van Bemmelen, W., & Boerema, J.* Semidiurnal horizontal oscillation of the free atmosphere up to 10 kilometers above sealevel, deduced from pilot-balloon observations at Batavia. Proc., Roy. acad., Amsterdam, 1917, 20:119-135, plate.
See also the abstract in this REVIEW, January, 1918, 46:22.

SPRING OF 1918 IN THE BRITISH ISLES.

[*Reprinted from* Nature, London, May 9, 1918, 101: 190-191.]

Spring this year has somewhat resembled that of last year, except that the early days of May this year have been much colder. The reports issued by the Meteorological Office show that the cold spells which have prevailed with such persistence in London have been common over the whole of the British Islands. March was, for the most part, dry, mild, and sunny; the mean temperature at Greenwich was 44°, which is 2 degrees above the average, and 5 degrees warmer than March, 1917. The mean temperature for April this year was 45°, which is 3 degrees below the average, but 2 degrees warmer than April last year. The warmest week since the commencement of spring is the week ending March 23, when at Greenwich the mean temperature was 48.2°, which is 5.4 degrees above the average. The week with the greatest deficiency of temperature is the week ending April 20, when the mean was 40.4°, with a deficiency of 6.9 degrees; during this week the rainfall at Greenwich measured 1.79 inches, which is 0.2 inch more than the average for the whole month. In London, at Tulse Hill, in a Stevenson's screen, the maximum thermometer only rose to 60° or above on three days in April, and the highest temperature was 63°; while in March there were seven such warm days, and the highest temperature was 69°. April this year was peculiarly sunless, and this, coupled with the low temperature, kept vegetation throughout the month greatly at a standstill.

DANISH REPORT ON ARCTIC ICE DURING 1917.

[*Abstract reprinted from* Nature, London, May 30, 1918.]

The Danish Meteorological Institute has published its report for 1917 on the state of the ice in the Arctic seas (Isforholdene i de Arktishe Have). War conditions have made it impossible to obtain as full reports as usual except from the coasts of Greenland, Iceland, Spitzbergen, and the Barents Sea. In Spitsbergen and the Barents Sea the ice conditions were again abnormal and most unfavorable. The winter ice in Spitsbergen fjords broke up a month later than usual, and the autumn ice formed several weeks ahead of the average date. There was pack ice off the west coast of Spitsbergen throughout the summer months. The coast was most approachable during the first half of August and the second half of September. Throughout the summer it seems, as usual,